BANGALORE WATER SUPPLY AND SEWERAGE BOARD

CAUVERY BHAVAN, KEMPEGOWDA ROAD,
BANGALORE – 560 009

TENDERS FOR THE WORK OF

Tender for work of construction of Sump Tank for removal of fecal coliform and de-chlorination at 05 MLD Chikkabegur STP.

(Through e-procurement portal only)

www.kppp.karnataka.gov.in

Office of the Executive Engineer,
BANGALORE WATER SUPPLY & SEWERAGE BOARD
Office of the Executive Engineer (WWM-P) K&T Valley division, Kapila Bhavana,
2nd floor, 4th T block, 11th main road, 35th & 36th cross, Jayanagar, Bangaore-560041

Mobile –9845444084
e-mail – eewwmpkt@bwssb.gov.in

TENDER REFERENCE:	:	No. BWSSB/EE(WWM-P) K&T/AE/ /2024-25 Dated:
PERIOD OF SUBMISION OF TENDER DOCUMENT:	:	From: 26.09.2024
LAST DATE FOR SUBMISION OF TENDER DOCUMENT:	:	03.10.2024 up to 16:00 hours
TIME AND DATE OF OPENING OF TENDERS:	:	04.10.2024 up to 16:05 hours
PLACE OF OPENING OF TENDERS	:	**Executive Engineer (WWM-P)-K&T Valley Division, Kapila Bhavana, 2nd floor, 4th T block, 11th main road, 35th & 36th cross, Jayanagar, Bangaore-560041**
ADDRESS FOR COMMUNICATION	:	**Executive Engineer (WWM-P) K&T Valley Division, Kapila Bhavana, 2nd floor, 4th T block, 11th main road, 35th & 36th cross, Jayanagar, Bangaore-560041**

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SECTION 1:

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

Office of the Executive Engineer,

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

Executive Engineer (WWM-P) K&T Valley Division,

Kapila Bhavana, 2nd floor, 4th T block, 11th main road, 35th & 36th cross, Jayanagar, Bangaore-560041

Website www.kppp.karnataka.gov.in.

Ph: **9845444084**

Email: **eewwmpkt@bwssb.gov.in**

INVITATION FOR TENDER

(ONLY THROUGH www.kppp.karnataka.gov.in**)**

IFT No.BWSSB/EE(WWM-P) K&T/AE/ 722 /2023-24 Dated: 23.09.2024

For and on behalf of the Bangalore Water Supply and Sewerage Board, SHORTERM **ITEMWAR TENDER is** invited through e-procurement process with tender procedure in line with Rule 28 of the KTPP Act by the **Executive Engineer(WWM-P)- K&T Valley Division**,**Kapila Bhavana, 2nd floor, 4th T block, 11th main road, 35th & 36th cross, Jayanagar, Bangaore-560041**for the following work from registered Agencies of appropriate class as indicated against each work of **BWSSB/KUWSDB/KPWD,** etc... who are having adequate financial resources, past experience in similar nature of work possessing valid GST registration. The Board keeps the right of acceptance or rejection of any tender without assigning any reasons.

The Tenderers are required to upload the EMD declaration inwww.kppp.karnataka.gov.in as per new guidelines of G.O.

1. (1) Credit Card (Online Payment) (2) Direct Debit Using Internet Banking (Online Payment) (3) Remittance at the Bank Counter - Challan (Offline Payment) (4) NEFT (Offline payment). The details regarding their capability to undertake the tender (as detailed in ITT Clause 4) and the price tender shall be uploaded in the website. Technical details will be opened on the date and time mentioned in ITT clause 5 and evaluated. The price tender of the Tenderer, who is found to be qualified to execute the tendered works, will be opened on the date notified later. The Tenderers are advised to note the minimum qualification criteria specified in Clause 3 of the Instructions to Tenderers to qualify for award of the contract.

2. Tender documents may be downloaded from www.kppp.karnataka.gov.in website only. Interested tenderers may obtain further information at the same address.

3. Additional information related to e-procurement process can be obtained through the above-mentioned website or contact e-procurement helpdesk No.**080-2550 1216 / 2550 1227**. The electronic tender comprising Technical and Financial bids will be operated as Single stage Tender system.

4. Bidders can access tender documents from www.kppp.karnataka.gov.in website only and upload the required details; those are mentioned in different sections in the bid document in to electronic tender on the website. Scanned documents those are required to be furnished as per Section 2; 3 & 4 of the bid document shall be submitted through e- procurement.

5. The Tender processing fee once paid will not be refunded.

6. **The Last date and time for Receipt of tenders will be on up to 16:00 Hrs** and the date of opening of tender will be **on after 16.05 Hrs**.

Sl. No.	Name of work	Amount put to tender	Earnest Money deposit 2.00%	Tender Processessing fee	Period of Completion of work	Clause of tender	Eligibility
1	**Tender for work of construction of Sump Tank for removal of fecal coliform and de-chlorination at 05 MLD Chikkabegur STP**	Rs 20,44,013/- (Excluding GST @18%)	Rs 40,880/-	www.kppp.karnataka.gov.in	03 Months	KW-2 (Single cover)	As KT a

Note:

1) a). The amount put to tender is Rs 20,44,013/- is excluding GST @18 % and the bidder should also quote excluding GST.

b). GST amount will be as per the applicable law of the land.

2) Financial evaluation will be based on 1(a) of above note.

The Eligibility criteria on for the above works is as follows:

1. The tender is based on Single Cover System
2. Contractors should have registration in BWSSB or KPWD/KUWSDB, etc as per KTPP act. Those who does not have BWSSB registration can also participate in the tender provided they should get registered in the Board in case the tender is awarded before the issue of Work Order.
3. The tenderer should have in last 5 years' period achieved in at least two financial year an average annual financial turnover of rupees not less than the estimated cost i.e. Rs 24.11 Lakhs (Profit & loss account, Balance sheet should certified/audited by Chartered account)
4. The tenderer should have satisfactorily completed at least 50% of the contract value, as prime contractor at least one similar work, value not less than Rs.12.05 Lakhs (50% of amount put to tender).
5. The tenderer should have experience in construction of at least any one of the Units
   pertaining to sewage treatment plant.
6. Assessed available tender capacity should be (A*N*2.5)-B> Rs. 24.11 Lakh (excluding GST @ 18%) should be greater than the amount put to tender,
   where,
   A= Maximum value of Civil Engineering works executed in any one year during the last five years taking into account the completed as well as works in progress
   N = Number of years
   B = Value of on-going works
7. Uploading "Form of tender" is mandatory at the time of submission of document through e-procurement portal.
8. The Third-Party inspection will be carried out for the work & the Third party will be nominated by BWSSB.
9. Applications / requisitions from joint venture Firms are not acceptable.
10. Bangalore Water Supply and Sewerage Board (BWSSB) reserve the right to cancel or annul the entire or part of this process of invitation at any time without assigning any reason.
11. For any additional information regarding the above tender, the firms who are interested to quote may contact office of the undersigned at the office address given below on all working days during office hours (10:30hours to 17:00 hours).

12. List of documents to support qualification of bidder is to be uploaded to the e-procurement website www.kppp.karnataka.gov.in

13. All other conditions put forth as per KW-2 of KTPP act shall be followed read with amendments vide G.O No.FD4PCL 2008 Bangalore Dt:14.10.2008

14. Other details can be seen in the tender documents

16. Within 20 Days of the receipt of the letter of acceptance, the successful tenderer shall deliver to the employer a Security deposit in any of the forms given below. **For an amount equivalent to 5% of the contract price plus additional security for unbalanced tenders in accordance with clause 24 of ITT & clause 44 of the conditions of contract for all works** from a Nationalized / Scheduled Indian Bank, with jurisdiction at Bangalore as specified

17. Bidders shall submit Offers that copy with the requirements of the bid document, including the basic technical design as indicate in the drawing & specifications. Alternatives will not be considered. The attention of the bidders is drawn to clause 23 regarding the rejection of the bids, which are not substantially responsive to the requirement of the bid document.

18. Further details may be had from this office during the office hours on all working days.
Corrigendum/Addendum/Modification/corrections, if any, will be published in the Web site only.

19. The form of tender as per the Performa available & bid capacity in **KW-2** should be duly filled & uploaded in the tender wizard as apart of tender document which is mandatory.

Executive Engineer (WWM-P)- K&T Valley Division
Kapila Bhavana, 2nd floor, 4th T block, 11th main road, 35th & 36th cross, Jayanagar, Bangaore-560041.

SECTION 2: INSTRUCTIONS TO TENDERERS (ITT)

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A. General

1. Scope of Tender

1.1 The Executive Engineer, BWSSB, WWM-Project K&T Valley Division, Kapila Bhavan, 2nd Floor, 35th cross, Jayanagar 4th T Block Jayanagar, Bangalore 560 041 (Referred to as Employer in these documents) invites tenders from Contractors registered in BWSSB/PWD/BBMP/BDA/KUWSDB CPWD etc., for the construction of works (as defined in these documents and referred to as "the works") detailed in the Table given in the Invitation for Tenders (IFT). The tenderers may submit tenders for any or all of the works detailed in the table given in IFT.

2. Eligible Tenderers

2.1 Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Karnataka

2.2 **Tenders from Joint ventures are not acceptable.**

3. Tender capacity:

3.1 Eligible Tenderers will be qualified only if their available tender capacity is more than the total tender value. The available tender capacity will be calculated as under:

Assessed available tender capacity = (A*N*2.5 - B)

Where

A = Maximum value of civil engineering works executed in any one year during the last five years (updated to March 2024 price level) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which Tenders are invited.

B = Value, at March 2024 price level, of existing commitments and on-going works to be completed during the next one year.

Note: The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Employer in charge, not below the rank of an Executive Engineer or equivalent.

3.2 Even though the tenderers meet the above criteria, they are subject to be disqualified if they have:

- Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or

- Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or

- Participated in the previous Tender for the same work and had quoted unreasonably high tender prices and could not furnish rational justification.

B. Tender documents

4. Content of Tender documents

4.1 The set of tender documents shall have all the Sections given in Page 2:

4.2 Both the sets should be completed and returned with the tender.

5. Amendment of Tender documents

5.1 Before the deadline for submission of tenders, the Employer may modify the tender documents by issuing addenda.

5.2 Any addendum thus issued shall be part of the tender documents and shall be communicated in writing or by cable to all the purchasers of the tender documents.

5.3 To give prospective tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend as necessary the deadline for submission of tenders, in accordance with Sub-Clause 12.2 below.

C. Preparation of Tenders

6. Documents comprising the Tender

6.1 The tender submitted by the Tenderer shall comprise the following:

(a) The Tender (in the format indicated in Section 3).

(b) Earnest Money Deposit;

(c) Priced Bill of Quantities;

(d) Qualification Information Form and Documents;

and any other materials required to be completed and submitted by tenderers in accordance with these instructions. **The documents listed under Sections 3, 5 and 8 shall be filled in without exception.**

7. Tender prices

7.1 The contract shall be for the whole works as described in Sub-Clause 1.1, based on the priced Bill of Quantities submitted by the Tenderer.

7.2 The Tenderer shall fill in rates and prices and line-item total (both in figures and words) for all items of the Works described in the Bill of Quantities along with total tender price (both in figures and words). Items for which no rate or price is entered by the Tenderer will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. Corrections, if any, shall be made by crossing out, initialing, dating and rewriting.

7.3 All duties, taxes, and other levies payable by the contractor under the contract, or for any other cause, shall be included in the rates, prices and total Tender Price submitted by the Tenderer.

7.4 The rates and prices quoted by the Tenderer shall be fixed for the duration of the Contract and shall not be subject to adjustment on any account.

8. Tender validity

8.1 Tenders shall remain valid for a period not less than ninety days after the deadline date for tender submission specified in Clause 12. A tender valid for a shorter period shall be rejected by the Employer as non-responsive.

8.2 In exceptional circumstances, prior to expiry of the original time limit, the Employer may request that the tenderers may extend the period of validity for a specified additional period. The request and the tenderers' responses shall be made in writing or by cable. A tenderer may refuse the request without forfeiting his earnest money deposit. A tenderer agreeing to the request will not be required or permitted to modify his tender, but will be required to extend the validity of his earnest money deposit for a period of the extension, and in compliance with Clause 9 in all respects.

9. Earnest money deposit

9.1 The Tenderer shall furnish, as part of his tender, earnest money deposit in the amount as shown in column 4 of the Table of IFT for this particular work. This earnest money deposit shall be in cash or may be in the form of Banker’s cheque/ Demand draft/Pay Order, in favour of Chairman, BWSSB payable at Bangalore or specified Small Savings Instruments pledged to Chairman, BWSSB Refer Clause 12 (1) Chapter IV of KTPP Rules 2000.

9.2 Instruments having fixed validity issued as earnest money deposit for the tender shall be valid for 45 days **beyond** the validity of the tender.

9.3 Any tender not accompanied by an acceptable earnest money deposit and not secured as indicated in Sub-Clauses 9.1 and 9.2 above shall be rejected by the Employer as non-responsive.

9.4 The earnest money deposit of unsuccessful tenderers will be returned within 30 days of the end of the tender validity period specified in Sub-Clause 8.1.

9.5 The earnest money deposit of the successful Tenderer will be discharged when the Tenderer has signed the Agreement and furnished the required Performance Security.

9.6 The earnest money deposit may be forfeited:

(a) if the Tenderer withdraws the Tender after tender opening during the period of tender validity;
(b) if the Tenderer does not accept the correction of the Tender Price, pursuant to Clause 19; or
(c) in the case of a successful Tenderer, if the Tenderer fails within the specified time limit to
(i) sign the Agreement; or
(ii) furnish the required Security deposit

10. Format and signing of Tender

10.1 The Tenderer shall prepare one original and a copy of the documents comprising the Tender as described in Clause 6 of these Instructions to Tenderers, bound with the volume containing the Form of Tender, and clearly marked "**ORIGINAL**" and "**COPY"** as appropriate. In the event of discrepancy between them, the original shall prevail.

10.2 The original and a copy of the Tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Tenderer. All pages of the tender where entries or amendments have been made shall be initialed by the person signing the tender

10.3 The Tender shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialed by the person signing the Tender.

D. Submission of Tenders

11. Sealing and marking of tenders

11.1 The Tenderer shall seal the original and a copy of the Tender in separate envelopes, duly marking the envelopes as "**ORIGINAL**" and "**COPY**". These envelopes (called as inner envelopes) shall then be put inside one outer envelope.

11.2 The **inner and outer** envelopes shall

(a) be addressed to the Employer at the following address:

The Executive Engineer, BWSSB, (WWM-P)-K&T Valley Division, Kapila Bhavan, 2nd Floor, 35th Cross, 4th T Block Jayanagar, Bangaloe-560041 and

(b) bear the following identification:

- Tender for the work of construction of sump tank for removal of fecal coliform and de-chlorination at 5MLD Chikkabegur STP

- Tender Reference No: BWSSB/EE(WWM-P)-K&T/PB/ /2024-25 Dt:

- DO NOT OPEN BEFORE 5.30PM on

11.3 In addition to the identification required in Sub-Clause 11.2, the inner envelopes shall indicate the name and address of the Tenderer to enable the tender to be returned unopened in case it is declared late, pursuant to Clause 13.

11.4 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Tender.

12. Deadline for submission of the Tenders

12.1 Tenders must be received by the Employer at the address specified above no later than…….

In the event of the specified date for the submission of tenders being declared a holiday for the Employer, the tenders will be received up to the appointed time on the next working day.

12.2 The Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Clause 5, in which case all rights and obligations of the Employer and the Tenderers previously subject to the original deadline will then be subject to the new deadline.

13. Late Tenders

13.1 Any Tender received by the Employer after the deadline prescribed in Clause 12 will be returned unopened to the Tenderer.

14. Modification and Withdrawal of Tenders

14.1 Tenderers may modify or withdraw their Tenders by giving notice in writing before the deadline prescribed in Clause 12.

14.2 Each Tenderer's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clause 10 & 11, with the outer and inner envelopes additionally marked.

"**MODIFICATION**" or "**WITHDRAWAL**", as appropriate.

14.3 No Tender may be modified after the deadline for submission of Tenders.

14.4 Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in Clause 8.1 above or as extended pursuant to Clause 8.2 may result in the forfeiture of the earnest money deposit pursuant to Clause 9.

1 4.5 Tenderers may only offer discounts to, or otherwise modify the prices of their Tenders by submitting Tender modifications in accordance with this clause, or included in the original Tender submission.

E. Tender opening and evaluation

15. Tender opening

15.1 The Employer will open all the Tenders received (except those received late), including modifications made pursuant to Clause 14, in the presence of the Tenderers or their representatives who choose to attend at _____ hours on _____ the date and the place specified in Clause 12. In the event of the specified date of Tender opening being declared a holiday for the Employer, the Tenders will be opened at the appointed time and location on the next working day.

15.2 Envelopes marked "**WITHDRAWAL**" shall be opened and read out first. Tenders for which an acceptable notice of withdrawal has been submitted pursuant to Clause 14 shall not be opened. Subsequently all envelopes marked "**MODIFICATION**" shall be opened and the submissions therein read out in appropriate detail.

15.3 The Tenderers' names, the Tender prices, the total amount of each Tender, any discounts, Tender modifications and withdrawals, the presence or absence of Tender security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. No Tender shall be rejected at Tender opening except for the late Tenders pursuant to Clause 13. Tenders [and modifications] sent pursuant to Clause 14 that are not opened and read out at Tender opening will not be considered for further evaluation regardless of circumstances. Late and withdrawn Tenders will be returned un-opened to Tenderers.

15.4 The Employer shall prepare minutes of the Tender opening, including the information disclosed to those present in accordance with Sub-Clause 15.3.

16. Process to be confidential

16.1 Information relating to the examination, clarification, evaluation, and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons

not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence the Employer's processing of Tenders or award decisions may result in the rejection of his Tender.

17. Clarification of Tenders

17.1 To assist in the examination, evaluation, and comparison of Tenders, the Employer may, at his discretion, ask any Tenderer for clarification of his Tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the Tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Tenders in accordance with Clause 19.

17.2 Subject to sub-clause 17.1, no Tenderer shall contact the Employer on any matter relating to its Tender from the time of the Tender opening to the time the contract is awarded. If the Tenderer wishes to bring additional information to the notice of the Employer, it should do so in writing.

17.3 Any effort by the Tenderer to influence the Employer in the Employer’s Tender evaluation, Tender comparison or contract award decisions may result in the rejection of the Tenderers’ Tender.

18. Examination of Tenders and determination of responsiveness

18.1 Prior to the detailed evaluation of Tenders, the Employer will determine whether each Tender (a) meets the eligibility criteria defined in Clause 2; (b) has been properly signed; (c) is accompanied by the required earnest money deposit and; (d) is substantially responsive to the requirements of the Tender documents.

18.2 A substantially responsive Tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is

one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the Tender documents, the Employer's rights or the Tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

18.3 If a Tender is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

19. Correction of errors

19.1 Tenders determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) where there is a discrepancy between the rates in figures and in words, the lower of the two will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

19.2 The amount stated in the Tender will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Tenderer, shall be considered as binding upon the Tenderer. If the Tenderer does not accept the corrected amount the Tender will be rejected, and the earnest money deposit may be forfeited in accordance with Sub-Clause 9.6 (b).

20. Evaluation and comparison of Tenders

20.1 The Employer will evaluate and compare only the Tenders determined to be substantially responsive in accordance with Clause 18.

20.2 In evaluating the Tenders, the Employer will determine for each Tender the evaluated Tender Price by adjusting the Tender Price as follows:

(a) making any correction for errors pursuant to Clause 19; and

(b) making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub Clause 14.5.

20.3 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the

Tender documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Tender evaluation.

F. Award of Contract

21. Award criteria

21.1 Subject to Clause 22, the Employer will award the Contract to the Tenderer whose Tender has been determined to be substantially responsive to the Tender documents and who has offered the lowest evaluated Tender Price, provided that such Tenderer has been determined to be (a) eligible in accordance with the provisions of Clause 2, and (b) qualified in accordance with the provisions of Clause 3.

22. Employer's right to accept any Tender and to reject any or all Tenders

22.1 Notwithstanding Clause 21, the Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Employer's action.

23. Notification of award and signing of Agreement

23.1 The Tenderer whose Tender has been accepted will be notified of the award by the Employer prior to expiration of the Tender validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

23.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 24.

23.3 The Agreement will incorporate all agreements between the Employer and the successful Tenderer. It will be kept ready for signature of the successful Tenderer in the office of Employer within 30 days following the notification of award along with the Letter of Acceptance. Within 20 days of receipt, the successful Tenderer will sign the Agreement and deliver it to the Employer.

23.4 Upon the furnishing by the successful Tenderer of the Security deposit, the Employer will promptly notify the other Tenderers that their Tenders have been unsuccessful.

24. Security deposit

24.1 Within 20 days of receipt of the Letter of Acceptance, the successful Tenderer shall deliver to the Employer a Security deposit in any of the forms given below for an amount equivalent to 5% of the Contract price : - Cash or - Banker's cheque/Demand draft,/Pay Order in favour of .Chairman , BWSSB payable at Bangalore or - Specified Small Savings Instruments pledged to Chairman , BWSSB

24.2 The Security deposit if furnished in cash or demand draft can, if requested, be converted to interest bearing securities at the cost of the contractor.

24.3 Failure of the successful Tenderer to comply with the requirements of Sub-Clause 24.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the earnest money deposit.

25. Corrupt or Fraudulent practices

25.1 The GOK requires that the Tenderers, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, GOK :

(a) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(b) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a GOK contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a GOK contract.

25.2 Furthermore, Tenderers shall be aware of the provision stated in sub-clause 43.2 of the Conditions of Contract.

SECTION 3:

FORMS OF TENDER, AND QUALIFICATION INFORMATION

- TABLE OF FORMS:

- FORM OF TENDER

- QUALIFICATION INFORMATION

- LETTER OF ACCEPTANCE

- NOTICE TO PROCEED WITH THE WORK

- AGREEMENT FORM

Form of Tender

Description of the Works: Work of construction of sup tank for removal of fecal coliform and de-chlorination at 5 MLD Chikkabegur STP.

To : The Executive Engineer,
BWSSB, (WWM-P)-K&T Valley Division,
Kapila Bhavan, Jayanagar 4th T Block,
Bangalore 560 041

GENTLEMEN,

We offer to execute the Works described above in accordance with the Conditions of Contract accompanying this Tender for the Contract Price of _____ [in figures] (_____) [in letters].

This Tender and your written acceptance of it shall constitute a binding contract between us. We understand that you are not bound to accept the lowest or any Tender you receive.

We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against

fraud and corruption in force in India namely “Prevention of Corruption Act 1988”.

We hereby confirm that this Tender complies with the Tender validity and Earnest money deposit required by the Tender documents.

We attach herewith our current income-tax clearance certificate.

Yours faithfully,

Authorized Signature:

Name & Title of Signatory:

_____

Name of Tenderer _____

Address: ----------

Qualification Information

The information to be filled in by the Tenderer hereunder will be used for purposes of computing Tender capacity as provided for in Clause 3 of the Instructions to Tenderers. This information will not be incorporated in the Contract.

1.1 Constitution or legal status of Tenderer [Attach copy]

Agency in which Registered (with Registration No.)

(Attach Copy)

Principal place of business: _____

1.2 Total value of civil engineering construction

works executed and payments received in the last five years

2019-20

2020-21

2021-22_____

2022-23_____
2023-24_____

1.3 Information on works for which Tenders have been submitted and works which are yet to be completed as on the date of this Tender.

(A) <u>Existing commitments and on-going works:</u>

Description of Work (1)	Place & State (2)	Contract No. & Date (3)	Name and Address of Employer (4)	Value of Contract (Rs. lakhs) (5)	Stipulated period of completion (6)	Value of works remaining to be completed Rs. lakhs) Attach Certificates from Engineers –in-Charge (7)	Anticipated date of completion (8)

Description Place Contract No. Name Value of Stipulated Value of works Anticipated

of & & Date and Contract period of remaining to be date of

Work State Address (Rs. lakhs) completion completed completion

of Employer (Rs. lakhs)

(B) <u>Works for which Tenders already submitted</u>:

Descripti	Place &	Name	Estimat	Stipulat	Date	Remark

on of Work (1)	State (2)	and Address of Employer (3)	ed value of works (Rs. lakhs) (4)	ed period of completion (5)	when decision is expected (6)	s if any (7)

1.4. Name, address, and telephone, telex, and fax numbers of the Tenderers' bankers who may provide references if contacted by the Employer.

Phone: 9845444084

O/o Executive Engineer
EE(WWM-P)-K&T Valley,
Kapila Bhavan, 4th T Block Jayanagar,
Bangalore-41.

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

No. BWSSB/EE (WWM-P)-K&T Valley/PB/ /2024-25 Date:

Letter of Acceptance

To:

Dear Sir,

Sub: Work of construction of sup tank for removal of fecal coliform and de-chlorination at 5 MLD Chikkabegur STP

****

This is to notify you that your Tender dated ---------- for execution of the Work of construction of sup tank for removal of fecal coliform and de-chlorination at 5 MLD chikkabegur STP for the Contract Price of Rs.----------/- (Rupees ---------- only) as corrected and modified in accordance with the Instructions to Tenderers is hereby accepted.

You are hereby requested to furnish Security deposit, in the form detailed in Para 24.1 of ITT for an amount of Rs.----------/- (Rupees ---------- only) within 20 days of the receipt of this letter of acceptance valid up to 30 days from the date of expiry of Defects Liability Period i.e. up to one year after completion of work i.e., up to ---------- and sign the contract, failing which action as stated in Para 24.3 of ITT will be taken.

Yours faithfully,

E

Executive Engineer,
BWSSB,(WWM-P)-K&T Valley
Kapila Bhavan, 2nd floor, 4th T
Block Jayanagar, Bangalore-

Copy submitted to ACE(WWM)-EAST for kind information.
Copy to AEE(WWM-P)-2 for information and necessary action.
Copy to Accounts Branch for information.
Copy Office Copy.

O/o Executive Engineer
EE(WWM-P)-K&T Valley,
Kapila Bhavan, 4th T Block Jayanagar,
Bangalore-41.

BANGALORE WATER SUPPLY AND SEWERAGE BOARD

No. BWSSB/EE (WWM-P)-K&T Valley/PB/ /2024-25

Date:

Issue of Notice to proceed with the work

To:

Dear Sir,

Sub: Work of construction of sup tank for removal of fecal coliform and de-chlorination at 5 MLD chikkabegur STP.

****

Pursuant to your furnishing the requisite Security deposit as stipulated in ITT Clause 24.1 and signing of the contract agreement for the Sub: Work of construction of sup tank for removal of fecal coliform and de-chlorination at 5 MLD Chikkabegur STP

Tender Price of Rs.----------/- (Rupees ---------- only) you are hereby instructed to proceed with the execution of the said works in accordance with the contract documents.

Yours faithfully,

Executive Engineer (WWM-P)
K&T Valley Division, Kapila Bhavan,
2nd Floor, 35th Cross, Jayanagar 4th Block,
Bangalore-560041

Copy submitted to ACE(WWM)-East for kind information.
Copy to AEE(WWM-P)-2 for information and necessary action.
Copy to Accounts ranch for information.

Agreement Form

Agreement

This agreement, made the ---------- between Executive Engineer, BWSSB, (WWM-PROJECT)-K&T VALLEY Division, KAPILA BHAVAN, 2ND FLOOR, 35TH CROSS, JAYANAGAR 4TH T BLOCK, BAGALORE-560041 (hereinafter called "the Employer") of the one part and

----------.(of contractor] (hereinafter called "the Contractor") of the other part.

Whereas the Employer is desirous that the Contractor Work of construction of sup tank for removal of fecal coliform and de-chlorination at 5 MLD Chikkabegur STP and the Employer has accepted the Tender by the Contractor for the execution and completion of such Works and the remedying of any defects therein at a contract price of Rs.----------/- (Rupees ---------- only).

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.

3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:

i) Letter of Acceptance;

ii) Notice to proceed with the works;

iii) Contractor's Tender;

iv) Contract Data;

v) Conditions of contract (including Special Conditions of Contract);

vi) Specifications;

vii) Drawings;

viii) Bill of Quantities; and

ix) Any other document listed in the Contract Data as forming part of the contract.

5. Jurisdiction of Courts /Arbitration: The sitting of Arbitration shall be held at Bangalore only and nowhere else.

6. Dispute of any kind arising out of the Contract shall be resolved within the jurisdiction of Bangalore City only and the parties agree and clearly understand that the Courts /Tribunals situated at Bangalore Metropolitan City have exclusive jurisdiction for the redressal of the disputes arising out of the Contract and at no other place.

7. The parties further agree and understand that the place or places of issue of bank guarantee other than Bangalore will have no jurisdiction to resolve dispute of any kind relating to enforcement of the bank guarantees submitted by the contractor at Bangalore for the execution of the contract at Bangalore.

8. The Contractor shall comply with all legal requirements in the matter of employment of workmen and provide all safety gadgets to the workmen while working in the hazardous place or conditions during the execution of the contract.

9. Contactor shall be fully responsible in the event of death of employee/workmen during the execution of the work and liable to pay adequate compensation to the dependants of employee/workmen as per law.

10. On his/ their failure, if the Board is made to pay compensation the same shall be recovered by the Board from the contractor out of the amount due to the contractor or by appropriate legal action.

11. If death of any employee occurs during execution of work due to negligence of contractor, the contract will be liable for termination.

12. In the event of such termination, the employer may consider blacklisting of firm after due notice.

13. In case of any death or accident the contract will be cancelled after following due process.

14. The Board will be entitled to claim exemplary damages from the contractor in case of death of any work man / employees of the contractor in any of the BWSSB works as it damages the reputation of the Board.

In witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written. in the presence of:

Binding

Signature of Employer
Binding Signature of Contractor

Executive Engineer,
BWSSB, (WWM-P)-K&T VALLEY, KAPILA BHAVAN, 2ND FLOOR, 35TH CROSS, JAYANAGAR 4TH T BLOCK JAYANAGAR, BANGALORE-560041
Bangalore560 039.

SECTION 4: CONDITIONS OF CONTRACT

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Conditions of Contract

A. General

1. Definitions

1.1 Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Bold letters are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Tender.

Compensation events are those defined in Clause 34 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Employer in accordance with Sub Clause 38.1.

The **Contract** is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.3 below.

The **Contract Data** defines the documents and other information which comprise the Contract.

The **Contractor** is a person or corporate body whose Tender to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the completed Tender document submitted by the Contractor to the Employer.

The **Contract price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects liability period** is the period named in the Contract Data and calculated from the Completion Date.

The **Employer** is the party who will employ the Contractor to carry out the Works.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract price** is the Contract Price listed in the Employer's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Employer by issuing an extension of time.

Materials are all supplies, including consumables, used by the contractor for incorporation in the Works.

Plant is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is the area defined as such in the Contract Data.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Employer.

The **Start Date** is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

A **Variation** is an instruction given by the Employer which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Employer will provide instructions clarifying queries about the Conditions of Contract.

2.2 The documents forming the Contract shall be interpreted in the following order of priority:

(1) Agreement
(2) Letter of Acceptance, notice to proceed with the works
(3) Contractor’s Tender
(4) Contract Data
(5) Conditions of Contract
6) Specifications
(7) Drawings
(8) Bill of quantities and
(9) any other document listed in the Contract Data as forming part of the Contract.

3. Law governing contract

3.1 The law governing the Contract is the Laws of India supplanted by the Karnataka Local Acts.

4. Employer's decisions

4.1 Except where otherwise specifically stated, the Employer will decide contractual matters between the Employer and the Contractor.

5. Delegation

5.1 The Employer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

6. Communications

6.1 Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

7. Subcontracting

7**.**1 The Contractor may subcontract with the approval of the Employer but may not assign the Contract without the approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.

8. Other Contractors

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer.

9. Personnel

9.1 The Contractor shall employ the technical personnel (of number and qualifications) as may be stipulated by GOK from time to time during the execution of the work. The technical staff so employed shall be available at site as may be stipulated by the Employer.

9.2 If the Employer asks the Contractor to remove a person who is a member of the Contractor’s staff or his work force stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

10. Employer’s and Contractor's risks

10.1 The Employer carries the risks which this Contract states are Employer’s risks, and the Contractor carries the risks which this Contract states are Contractor’s risks.

11. Employer's risks

11.1 The Employer is responsible for the excepted risks which are (a) in so far as rebellion, riot commotion or disorder or (b) a cause due solely to the design of the Works, other than the Contractor’s design.

12. Contractor’s risks

12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

13. Queries about the Contract Data

13.1 The Employer will clarify queries on the Contract Data.

14. Contractor to construct the Works

14.1 The Contractor shall construct the Works in accordance with the Specification and Drawings.

15. The Works to be completed by the Intended Completion Date

15.1 The Contractor may commence execution of the Works on the Start Date and complete them by the Intended Completion Date.

16. Safety

16.1 The Contractor shall be responsible for the safety of all activities on the Site.

17. Discoveries

17.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Employer of such discoveries and carry out the Employer's instructions for dealing with them.

18. Possession of the Site

18.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be Compensation Event.

19. Access to the Site

19.1 The Contractor shall allow the Employer and any person authorized by the Employer access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be

carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

20. Instructions

20.1 The Contractor shall carry out all instructions of the Employer which comply with the applicable laws where the Site is located.

B. Time Control

21. Program

21.1 Within the time stated in the Contract Data the Contractor shall submit to the Employer for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.

21.2 The Employer's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Employer again at any time. A revised Program is to show the effect of Variations and Compensation Events.

22. Extension of the Intended Completion Date

22.1 The Employer shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date.

22.2 The Employer shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Employer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information.

23. Delays ordered by the Employer

23.1 The Employer may instruct the Contractor to delay the start or progress of any activity within the Works.

24. Management meetings

24.1 The Employer may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the progress achieved and the plans for remaining work.

24.2 The responsibility of the parties for actions to be taken is to be decided by the Employer either at the management meeting or after the management meeting and stated in writing to be distributed to all who attended the meeting.

C. Quality Control

25. Identifying defects

25.1 The Employer shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Employer may instruct the Contractor to search for a Defect and to uncover and test any work that the Employer considers may have a Defect

26. Tests

26.1 If the Employer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

27. Correction of defects

27.1 The Employer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

27.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Employer’s notice.

28. Uncorrected defects

28.1 If the Contractor has not corrected a Defect within the time specified in the Employer’s notice, the Employer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

D. Cost Control

29. Bill of Quantities (BOQ) ------- Separately Enclosed ----------

29.1 The BOQ shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.

29.2 The BOQ is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the BOQ for each item.

30. Variations

30.1 The Employer shall have power to order the Contractor to do any or all of the following as considered necessary or advisable during the progress of the work by him

(a) Increase or decrease of any item of work included in the Bill of Quantities (BOQ);

(b) Omit any item of work;

(c) Change the character or quality or kind of any item of work;

(d) Change the levels, lines, positions and dimensions of any part of the work;

(e) Execute additional items of work of any kind necessary for the completion of the works; and

(f) Change in any specified sequence, methods or timing of construction of any part of the work.

30.2 The Contractor shall be bound to carry out the work in accordance with any instructions in this connection, which may be given to him in writing by the Employer and such alteration shall not vitiate or invalidate the contract.

30.3 Variations shall not be made by the Contractor without an order in writing by the Employer, provided that no order in writing shall be required for increase or decrease in the quantity of an item appearing in the BOQ so long as the work executed conforms to the approved drawings.

30.4 The Contractor shall promptly request in writing the Employer to confirm verbal orders and if no such confirmation is received within 15 days of request, it shall be deemed to be an order in writing by the Employer.

31. Payments for Variations

31.1 Payment for increase in the quantities of an item in the BOQ up to 25% of that provided in the Bill of Quantities shall be made at the rates quoted by the Contractor.

31.2 For quantities in excess of 125% of the tendered quantity of an item as given in the BOQ, the Contractor shall be paid at the rate entered in or derived from, in the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract.

31.3 If there is no rate for the additional, substituted or altered item of the work in the BOQ, efforts would be made to derive the rates from those given in the BOQ or the Schedule of Rates (applicable for the area of the work and current at the time of award of contract) and if found feasible the payment would be made at the derived rate for the item plus or minus the overall percentage of the original tendered rates over the current Schedule of Rates prevalent at the time of award of contract

31.4 If the rates for additional, substituted or altered item of work cannot be determined either as at 31.1, 31.2 or 31.3 above, the Contractor shall be requested to submit his quotation for the items supported by analysis of the rate or rates claimed, within 7 days.

31.5 If the Contractor's quotation is determined unreasonable, the Employer may order the Variation and make a change to the Contract Price which shall be based on Employer’s own forecast of the effects of the Variation on the Contractor's costs.

31.6 f the Employer decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

31.7 Under no circumstances the Contractor shall suspend the work on the plea of non-settlement of rates for items falling under this Clause.

32. Submission of bills for payment

32.1 The Contractor shall submit to the Employer monthly bills of the value of the work completed less the cumulative amount paid previously.

32.2 The Employer shall check the Contractor's bill and determine the value of the work executed which shall comprise of (i) value of the quantities of the items in the BOQ completed and (ii) valuation of Variations and Compensation Events.

32.3 The Employer may exclude any item paid in a previous bill or reduce the proportion of any item previously paid in the light of later information.

33. Payments

33.1 Payments shall be adjusted for deductions for retention, other recoveries in terms of the contract and taxes, at source, as applicable under the law. The Employer shall pay the Contractor the within 60 days of submission of bill.

33.2 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

34. Compensation events

34.1 The following are Compensation events unless they are caused by the Contractor:

(a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.

(b) The Employer orders a delay or does not issue drawings, specifications or instructions required for execution of works on time.

(c) The Employer instructs the Contractor to uncover or to carry out additional tests upon work which is then found to have no Defects.

(d) The Employer gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.

(e) The effect on the Contractor of any of the Employer’s Risks.

(f) The Employer unreasonably delays issuing a Certificate of Completion.

(g) Other Compensation Events listed in the Contract Data or mentioned in the Contract.

34.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date is extended. The Employer shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

34.3 As soon as information demonstrating the effect of each Compensation event upon the Contractor's forecast cost has been provided by the Contractor, it is to be assessed by the Employer and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Employer shall adjust the Contract Price based on Employer’s own forecast. The Employer will assume that the Contractor will react competently and promptly to the event.

34.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Employer.

35. Tax

35.1 The rates quoted by the Contractor shall be deemed to be inclusive of the sales and other taxes that the Contractor will have to pay for the performance of this Contract. The Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.

36. Liquidated damages

36.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages does not affect the Contractor's liabilities.

36.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment of bill.

37. Cost of repairs

37.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

38. Completion

38.1 The Contractor shall request the Employer to issue a Certificate of Completion of the Works and the Employer will do so upon deciding that the Work is completed.

39. Taking over

39.1 The Employer shall take over the Site and the Works within seven days of issuing a certificate of Completion.

40. Final account

40.1 The Contractor shall supply to the Employer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Employer shall issue a Defect Liability Certificate and certify any final payment that

is due to the Contractor within 90 days of receiving the Contractor's account if it is correct and complete. If it is not, the Employer shall issue within 90 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Employer shall decide on the amount payable to the Contractor and make payment within 60 days of receiving the Contractor’s revised account.

41. As built drawings

41.1 If “as built” Drawings are required, the Contractor shall supply them by the dates stated in the Contract Data.

41.2 If the Contractor does not supply the Drawings by the dates stated in the Contract Data, or they do not receive the Employer’s approval, the Employer shall withhold the amount stated in the Contract Data from payments due to the Contractor.

42. Termination

42.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

42.2 Fundamental breaches of Contract include, but shall not be limited to the following:

(a) the Contractor stops work for 45 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer;

(b) the Employer instructs the Contractor to delay the progress of the Works and the instruction is not withdrawn within 60 days;

(c) The Contractor becomes bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) a payment due to the Contractor is not paid by the Employer within 90 days of the date of the submission of the Bill by Contractor;

(e) the Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Employer;

(f) the Contractor does not maintain a security which is required;

(g) the Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the Contract data; and

(h) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in the executing the Contract.

For the purpose of this paragraph: “corrupt practice” means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution. “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.”

42.3 When either party to the Contract gives notice of a breach of contract to the Employer for a cause other than those listed under Sub Clause 42.2 above, the Employer shall decide whether the breach is fundamental or not.

42.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

42.5 If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site as soon as reasonably possible.

43. Payment upon Termination

43.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Employer shall prepare bill for the value of the work done less advance payments received up to the date of the bill, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor the difference shall be a debt payable to the Employer.

43.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Employer shall prepare bill for the value of the work done, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and less advance payments received up to the date of the certificate, less other recoveries due in terms of the

contract, and less taxes due to be deducted at source as per applicable law and make payment accordingly.

44. Property

44.1 All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

45. Release from performance

45.1 If the Contract is frustrated by any event entirely outside the control of either the Employer or the Contractor the Employer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

F. Special Conditions of Contract

1. **Labour :** The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Employer, deliver to the Employer a return in detail, in such form and at such intervals as the Employer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Employer may require.

2. **Compliance with labour regulations:**

During continuance of the contract, the Contractor and his sub contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for

non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, Employer shall have the right to deduct any money due to the Contractor including his amount of security deposit. The Employer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

3. **Protection of Environment:**

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation. During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and rules made there under, regulations, notifications and bye-laws of the State or Central Government, or local authorities and any other law, bye-law, regulations that may be passed or notification that may be issued in this respect in future by the State or Central Government or the local authority.

CONTRACT DATA

The following documents are also part of the Contract: **Clause Reference**

The Employer is : Executive Engineer, (WWM-PROJECT)-K&T VALLEY Division, KAPILA BHAVAN, 2ND FLOOR, 35TH CROSS, JAYANAGAR 4TH T BLOCK, BANGALORE-560041.

Name of authorized Representative:
The name and identification number : /2024-25/dt:
work of construction of Sump Tank for removal of fecal coliform and de-chlorination at 5 MLD Chikkabegur STP.
The start date shall be the date of issue of
notice to proceed with the work**.** **:**

The Intended Completion Date for the whole of the Works is **:**

The following documents also form part of the Contract:
i) Letter of Acceptance;
ii) Notice to proceed with the works;
iii) Contractor's Tender;
iv) Contract Data;
v) Conditions of contract (including Special Conditions of Contract);
vi) Specifications;
vii) Drawings;
viii) Bill of Quantities
The Site Possession Date is :

The Site is located at, :
and is defined in drawings nos.
The Defects Liability Period is 365 days **:**

The liquidated damages for the whole of the works are
Rs.----------/- 0.1% Per day
The maximum amount of liquidated damages for the whole of the works:
Rs.----------/-
is ten percent of final contract price.
The date by which "as-built" drawings (in scale ---------) in 2 sets are required is within 30 days of issue of certificate of completion
The amount to be withheld for failing to supply "as built" drawings by the date required is
Rs.----------/-

EE (WWM-P)K&V

SECTION 7: SPECIFICATIONS

TECHNICAL SPECIFICATION

1.1. contractual requirements

1.2.1. Contractor's Inspection of Sites:

The Contractor is deemed to have visited the sites and familiarized himself of the conditions and restrictions under which the work will be executed. The omission of any details shall not relieve the Contractor of his prima facie obligation and responsibility under the Contract to carry out and successfully complete the rehabilitation works. The Employer will entertain no monetary or other claims, made by the Contractor on the grounds of 'want of knowledge'.

THE CONTRACTOR IS ADVISED THAT IT IS HIS SOLE RESPONSIBILITY TO ASCERTAIN FOR HIMSELF THE EXTENT OF WORK THAT IS REQUIRED TO BE DONE IN SITE AND TO GENERALLY OBTAIN HIS OWN INFORMATION ON ALL MATTERS AFFECTING DIRECTLY OR INDIRECTLY THE EXECUTION OF THE WHOLE WORKS INVOLVED IN THE CONTRACT TO THE COMPLETE SATISFACTION OF THE ENGINEER. THE ENGINEER WILL ENTERTAIN NO CLAIM OF EXTRAS IN CONSEQUENCE OF ANY ALLEGED IGNORANCE IN ANY ASPECT. IT MUST BE CLEARLY AND DEFINITELY UNDERSTOOD THAT THE CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR MAKING ALL NECESSARY ARRANGEMENTS AND COORDINATING WITH RELEVANT AUTHORITIES, COMPETENT AGENCIES AND SPECIALISTS ETC., TO ENSURE SATISFACTORY COMPLETION OF THE CONTRACT.

1.2.2. Tender Drawings and Contract Documents: NA

1.2.3. Time of completion.

Time period for completion of all the works shall be 3 Months (inclusive of monsoon period) from the date of issue of notice to commence. Within this period Contractor shall be required to complete the works, including testing, commissioning and completion of the three months Trial run period.

1.2.4. Work plan.

The Contractor shall prepare the work plan for the execution of works, which includes procurement of pipes, solid concrete blocks, steel before starting of the works. The Contractor shall submit the planning's (Construction, Financial, Quality and Commissioning and handing over planning's) within 14 days after issue of letter of acceptance and take necessary approvals for the same. The planning's shall be in the form of a PERT/CPM and a bar chart together with description of his proposed

method of working. The planning shall include all allowances to guard against delays caused due to inclement weather or its effects (such as floods or draughts), fire or industrial disputes, unless such events could not reasonably have been foreseen by an experienced Contractor.

The Contractor shall, within 21 days after the date of the Letter of Acceptance, submit to the Engineer for his consent a detailed description of the arrangements for conducting the quality control program during execution of the Works, including details of his testing Laboratory, equipment, staff and general procedures. If following submission or at any time during the progress of Works, it appears to the Engineer that the Contractor's quality control programme is not adequate to ensure the quality of the Works, the Contractor shall produce a revised program as desired by the Engineer, which will be adequate to ensure satisfactory quality control.

a. Third Party Inspections: The Third-Party inspection will be carried out for the work & the Third party will be nominated by BWSSB.

1.2.5. Sign Board

The Contractor shall provide sign boards at the sites of the Works of approved size and design as directed by the Engineer, which provides (i) the name of the Project and the financing agency; (ii) the names and addresses of the Employer, Contractor and Consultants; (iii) short description of the Project, (iv) the Contract amount (v) the starting and completion dates.

Such sign boards shall be located at specified places in the project coverage area as directed by the Engineer. Contractor shall take care of signboard and replace it in case of loss, damage, theft etc., the sign boards may be in English or Kannada or in both as directed by the Engineer.

1.2.7. Protection of Utilities

The Contractor is required to examine carefully the locations of the works and their alignments. Contractor is to make enquiries and co-ordinate with all the departments /authorities concerning all utility lines such as water pipes, sewers, gas pipe, telephone (underground and /or overhead) lines, optic fibre cables, electric and telecommunication cables (underground and /or overhead) , any other utility lines etc; to determine and verify to his satisfaction the character, sizes, position and lengths of such utilities from authentic records.

The Contractor shall be wholly responsible for the protection of such utilities as may be required, and shall not make any claim for extra work

or extra time that may be required to protect such utilities. Any damage, to the Utilities shall be restored/ repaired at Contractor's own cost. Shifting of any utilities if required will be taken up by BWSSB or any other agency separately after site inspection.

In case the alignment of the pipeline crosses the high tension electrical transmission lines belonging to the KPTCL / BESCOM or other authorities/ departments, the Contractor shall take all precautions necessary to see that the work is carried out with care and safety, without disturbing such transmission lines. The Contractor will be responsible to carry out all construction activities in such reaches in consultation with the owners of such facilities. However, satisfactory completion of the entire work will be the responsibility of the Contractor.

1.2.8. Performance Requirements:

The performance requirements have been spelt out in various parts of the Contract specification. The Contractor shall ensure that, he fully understands and complies with all the requirements specified in the Contract. However, in the event of any conflicting performance requirements spelt out in the documents, the Contractor shall promptly bring such matters in writing to the attention of the Engineer for Engineers decision. The Engineer's decision will be conveyed to the Contractor in writing and which is final. The Contractor shall fully comply with Engineer's decision on the matter.

The Contractor is deemed to have read and understood all performance requirements before bidding and he shall have no claim whatsoever with respect to the Engineer's final decision on the matter.

1.2.9. Contractor's Obligations:

The Clauses in this section are meant to provide general guidelines and Compliance requirements to the Contractor. It does not however relieve the Contractor from taking every other step and precautions as deemed necessary to complete the works successfully within the specified Contract period and bid amount. Also, compliance to the approved Environmental management plan and monitoring the same is part of the contract.

1.2.10. Working in Restricted areas.

In addition to the clause stated in other section of the special specification the Contractor shall determine prior to constructing the lengths of sewers where access to properties commercial, domestic and institutional will be restricted.

The identification of these areas shall be agreed in consultation with the Engineer, Police and Urban local body. In this case it may be

necessary to operate one-way traffic system or to close roads. The Contractor shall be responsible for liaising with the police and other local representatives to obtain permission to close roads or restrict traffic movement. No additional time will be allowed for these pre-construction activities. Where roads are closed alternative routes are to be determined in conjunction with the authorities. Sign Boards are to be placed at both junctions of the route indicating “ROAD CLOSED & WORK UNDER PROGRESS”. The expense for the same shall be borne by the contractor. The Contractor shall discuss these arrangements with the occupants of houses affected to ensure that their disruption is kept to a minimum. The Contractor is to offer assistance to residents who are infirm or need special arrangements for access during construction.

In narrow roads and streets, it may not be possible to operate excavation machinery in such cases hand excavation is to be done. The method of operation, length of sewer to be excavated, method of barricading, property access, dewatering, shoring, pipe laying, backfilling and road reinstatement shall be stated in a ‘Method Statement’ to be submitted at least 4 weeks before work is scheduled to commence in a particular location. The written agreement of the Engineer shall be obtained to the method statement. If any additional safeguards are required by the Engineer these shall be incorporated in the method statement at no extra cost and the method statement is to be resubmitted.

The Contractor will ensure that the noise created by his activities is suppressed. Adequate silencers fitted to construction machinery, particularly compressors and drills. Dust is to be kept to a minimum by using water sprinklers. Utility service connections shall be maintained to every property throughout the construction phase and thereafter. If any defect/ damage is caused it shall be repaired immediately and at the Contractors expense. The disruption to the normal activities of residents and other members of the public is to be kept to an absolute minimum. Providing adequate noise control and other nuisances are kept to a minimum, extended working hours may be permitted with the agreement of the Engineer and local residents. No additional payment shall be made for any of these arrangements unless otherwise specified. Adequate lighting shall be provided by the Contractor at his cost if night working is adopted.

1.2.11. Order of Precedence Within Bid Documents

In the event there is any conflict or discrepancy within the Bidding documents, the order of Precedence will be determined as follows;

1. Addendum
2. Contract data

3. Instruction to Bidders

4. Invitation to Bid

5. General conditions contract including special conditions contract

6. Technical specifications

7. Bill of quantities.

8. Drawings

1.2.12. Technical and Supervisory Staff: NA

1.2.19 MEASUREMNTS & PAYMENTS.

1.2.19.1. MEASUREMENTS

a. Quantities

The quantities set out in the Bill of Quantities are the estimated quantities for the Works, and they are not be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfillment of his obligations under the Contract.

b. Works to be Measured

The Engineer shall, except as otherwise stated, ascertain and determine by measurement the value of the works in accordance with the contract and the contractor shall be paid that value in accordance with applicable clauses of this contract. The Engineer shall, when he requires any part of the works to be measured, give reasonable notice to the Contractor's authorized agent, who shall:

a) forthwith attend or send a qualified representative to assist the Engineer or his representative in making such measurement, and

b) supply all particulars required by the Engineer or his representative.

Should the Contractor not attend, or neglect or omit to send such representative, then the measurement made by the Engineer or his representative or approved by him shall be taken to be the correct measurement for such part of the works. For the purpose of measuring such Permanent Works as are to be measured by records and drawings, the Engineer shall prepare such records and drawings as the work proceeds as he deems necessary or appropriate and the Contractor, as and when called upon to do so in writing, shall within 14 days, attend to examine and agree such records and drawings with the Engineer and shall sign the same when so agreed. If after examination of such records and drawings, the contractor does not agree the same or does not sign the same as agreed, they shall nevertheless be taken to be correct, unless the Contractor, within 14 days of such examination, lodges with the

Engineer notice of the respects in which such records and drawings are claimed by him to be incorrect. On receipt of such notice, the Engineer shall review the records and drawings and either confirm or vary them.

c. Method of Measurement

The Works shall be measured net, notwithstanding any general or local custom, except where otherwise provided for in the Contract.

1.2.13.1. PAYMENTS.

No part payments will be made for all items of works under this contract, except for pipeline works, which will be paid as mentioned in contract data.

2. Commissioning

After satisfactory completion of works and Testing of inlet channel as per specifications in above clauses, the system shall be commissioned for trial run and operation.

3. Final Finishing

The contractor will ensure that the entire structure along with all its installations is in finished and in new and fully operative condition when handed over. He shall have repaired and removed all signs of damage that might have been done during the course of construction. He shall also see that the entire exterior has been finished properly and the entire site is cleared of all extra construction material, debris, and excavated soil. This shall have to be done to the satisfaction of the Engineer.

4. As Built Drawings

The contractor shall submit to the Engineer within one months of actual completion of the work, “As Built” Drawings as specified below and operation and maintenance instructions for the whole of the Works. These Drawings shall be accurate and correct in all respects, including the existing sewer network for which the contractor has done the condition assessment survey, shall be submitted to, and approved by the Engineer. Completion Drawings as below on two prints and one polyester film shall be supplied by the contractor, along with a soft copy in CD. These drawings shall be developed in Auto CAD. Drawing shall be of standard size as below,

i). Strip Plans and L-sections of Under Ground Drainage system showing pipe work in package area on scale as per standard practices to the satisfaction of the Engineer, showing sewer alignments, levels, appurtenances, sizes and material of pipe etc. complete.

ii). Structural Drawings showing reinforcement details of all the components covered under this contract as per standard practices.

Section-8

PARTICULAR CIVIL AND STRUCTURAL REQUIREMENTS

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A. Standard Basic Specifications

The "*Standard Basic Specifications (Water Supply Works Contract)*" issued by the BWSSB, set out the specifications that shall be followed for construction of General Works under the BWSSB. Specifications for additional specialized items of civil works are as set out in Part B, Particular Technical Specifications, of this Section.

In the event of any discrepancy between the provisions of the Standard Basic Specifications and the Particular Technical Specifications, the provisions of the Particular Technical Specifications will prevail.

B. Particular Technical Specifications

8.1 Design Submissions

Before proceeding with design and drawing preparation the Contractor shall submit detailed general philosophy of design (Design Basis Report) of various parts of (all) the structures and equipment foundations along with explanatory sketches for review. Only after the review and incorporation of comments on the general philosophy, as offered during the review, the Contractor shall submit any design document and/or drawing for review and approval for construction.

8.1.1 Design Philosophy

Following are the details which are to be included in the general design philosophy document submission:

1. Design assumptions/philosophy for Liquid Retaining Structures with various boundary conditions as applicable
2. Design assumptions/philosophy for buildings
3. Design assumptions/philosophy for all other structures
4. Standard General Notes shall include material properties (grade, strength, unit weight etc.), development lengths, lap/splice lengths, Anchorage lengths under tension and compression, clear cover, water proofing specifications, legend used etc.

8.1.2 Standard Details

Following typical details shall also be submitted for approval prior to proceeding with detailed design:

1. Reinforcement detail showing the development length at Column/Footing intersection, Column and Roof beam intersections, Walls and Base slab intersections; Walls and cover slab intersections
2. Detailing of the reinforcement for columns, beams, beam/column intersection, footing/column intersection, and Slabs as per relevant code

provisions/requirements depending upon the assumptions made in the design as applicable.

3. Reinforcement detail for cut-outs in slabs and walls with maximum size of cut-outs
4. Reinforcement detail at top of RCC trench walls showing edge/seating angles
5. Pouring sequence of concrete and standard details for construction joints, expansion joints, contraction joints, etc.
6. Details of Manholes and Rungs to be placed in the tanks
7. Detail for rain water drainage down takes at terrace slab and water proofing at roof/sunken slabs
8. Detail for storm water drain, plinth protection and entrance ramps to buildings
9. Detail for Handrails and fixing detail of handrail to concrete, Steel Ladders and fixing detail of ladders to Walls/Concrete, Cage ladders, Boundary walls, Fencing and Gates, etc.,

Contractor shall not submit the detailed design and drawings until items mentioned in under clauses 8.1.1 and 8.1.2 are approved.

Complete detailed design calculations of foundations and superstructure together with general arrangement drawings and explanatory sketches shall be submitted to the Engineer. Separate design calculations for foundations or superstructures submitted independent of each other shall be deemed to be incomplete and will not be accepted by the Engineer.

Submissions of detailed design calculations and Good for Construction drawings shall include the following as a minimum:

A. Detailed Design Calculations
    1. One (1) Copy of a Compact Disc (CD) containing electronic files relevant to the structure's modelling, analysis and design calculations (Microsoft Excel, Staad Pro, etc.). Files submitted shall be in editable format.
    2. Print copy (6 Copies) of the contents as submitted in the Compact Disc.
B. Good for Construction Drawings
    1. One (1) Copy of a Compact Disc (CD) containing Autocad files (Civil General Arrangement, Structural Dimensions and Reinforcement Details) pertaining to the structure. Files submitted shall be in editable format.

2. Print copy (6 Copies) of the contents as submitted in the Compact Disc. Prints to be submitted on A1 Size Sheet as a minimum or A0 Size Sheet when required by the employer.
3. Bar-bending schedule indicating the number, shape and size of the rebars shall be submitted as part of the Reinforcement Details
4. Detailed drawing showing the location, number and depth of inserts shall be included for any structural steel inserts/Metal inserts in the structure such as rungs, bolted connections for ladders/railings, etc.
5. Location of Construction Joints and pour sequence shall be included on the drawing for base slabs, walls and top slabs.
6. Revised drawings shall be submitted by clouding at the location with the latest revision number and also show the history of revisions in a table format just above the title block.

The design considerations described hereunder establish the minimum basic requirements of plain and reinforced concrete structures, masonry structures and structural steel works. However, any particular structure shall be designed for the satisfactory performance of the functions for which the same is being constructed. The Contractor shall also take care to check the stability of partly completed structures.

8.2 Design Standards

All the designs shall be based on the latest Bureau of Indian Standard (BIS) Specifications or Codes of Practice. The design standards adopted shall follow the best modern engineering practice in the field based on any other International Standard or specialist literature subject to such standard reference or extract of such literature in the English language being supplied to and approved by the Engineer. In case of any variation or contradiction between the provisions of the BIS Standards or Codes and the specifications given along with the tender document, the provision given in this Specification shall be followed

All reinforced concrete structural design shall generally conform to the following publications of the Indian Standards Institution:

I.S: 456 - Code of Practice for plain and reinforced concrete.

I.S: 875 - Code of Practice for design loads for buildings and structures (Part I to V).

I.S: 3370 - Code of Practice for concrete structures for the storage of liquids (Part I to IV).

I.S: 1893 - Criteria for earthquake resistant design of structures (Part 1to 4).

I.S: 2974 - Code of Practice for design and construction of machine

- foundations (Part 1 to 4).
I.S: 2911 - Code of practice for Design and construction of Pile foundations. (Parts 1 to 4).
I.S: 13920 - Ductile Detailing of Reinforced Concrete Structures subjected to Seismic forces- Code of Practice.
IRC: 6 - Standard specification and Code of Practice for road bridges Loads and Stresses.
SP: 16 - Design Aids for Reinforced Concrete to IS 456.
SP: 34 - Handbook on Concrete Reinforcement and Detailing.

All structural steel design shall generally conform to the following publications of the Indian Standards Institution:

(i) I.S. 800 : Code of Practice for general construction in steel.

(ii) I.S. 806 : Code of Practice for use of steel tubes in general building construction.

(iii) SP: 38 : Handbook of Typified Design of Structures with Steel Roof Trusses.

8.3 Design Life

The design life of all structures and buildings shall be 20 years

8.4 Design Loadings

All buildings and structures shall be designed to resist the worst combination of the following loads/stresses under test and working conditions; these include dead load, live load, wind load, seismic load, stresses due to temperature changes, shrinkage and creep in materials, dynamic loads :

8.4.1. Dead Load

This shall comprise all permanent construction including walls, floors, roofs, partitions, stairways, fixed service equipment's and other items of machinery. In estimating the loads of process equipment all fixtures and attached piping shall be included, but excluding contents, shall be considered.

Dead loads shall be in general as per I.S. 875 Part (I). However, the following **minimum loads** shall be considered in design of structures:

(i)	Weight of water	9.81 kN/m^3
(ii)	Weight of soil (irrespective of strata available at site and type of soil used for filling etc). However, for checking stability against uplift, actual weight of soil as determined by field test shall be considered	20.00 kN/m^3
(iii)	Weight of concrete	24.00 kN/m^3
(iv)	Weight of reinforced concrete	25.00 kN/m^3

(v)	Weight of brickwork (exclusive of plaster)	22.00 N/m^2 per mm thickness of brickwork
(vi)	Weight of Solid Concrete Blockwork (exclusive of plaster)	24.00 N/m^2 per mm thickness of blockwork
(vii)	Weight of plaster to masonry surface	18.00 $N/m^{2\ per}$ mm thickness
(viii)	Weight of granolithic terrazo finish or rendering screed, etc.	24.00 N/m^2 per mm thickness
(ix)	Weight of sand (filter media)	26.0 kN/m^3
(x)	Weight of alum blocks	24.20 kN/m^3
(xi)	Weight of MS chequered plates	78.5 N/m2 per mm thickness of plates

8.5 Joints

Movement joints such as expansion joints, complete contraction joints, partial contraction joints and sliding joints shall be designed to suit the structure. However, contraction joints shall be provided at specified locations spaced not more than 7.5 m in both right angle directions for walls and rafts.
Expansion joints of suitable gap at suitable intervals not more than 30 m shall be provided in walls, floors and roof slabs of water retaining structures.

Construction joints shall be provided at right angles to the general direction of the member. The locations of construction joints shall be decided on convenience of construction. To avoid segregation of concrete in walls, horizontal construction joints are normally to be provided at every 2 m height. PVC waterstops of 150 mm width shall be used for walls and 230 mm width for base slabs.

8.6 Design Criteria for Underground or Partly Underground Liquid Retaining Structures

Water level is assumed at the ground level for design of all the structures. All underground or partly underground liquid containing structures shall be designed for the following conditions:

(i) Liquid depth up to full height of wall: no relief due to soil pressure from outside to be considered;
(ii) structure empty (i.e., empty of liquid, any material, etc.): full earth pressure and surcharge pressure wherever applicable , to be considered ;
(iii) partition wall between dry sump and wet sump : to be designed for full liquid depth up to full height of wall;
(iv) partition wall between two compartments : to be designed as one compartment empty and other full;

(v) Structures shall be designed for uplift in empty conditions with the water table as indicated in geotechnical report which is subject to seasonal variations or at approved High flood level of the site area, whichever is higher; The Stability of the structure shall have a factor of safety of 1.2 against uplift with appropriate safety factor to the characteristic dead load shall be considered as applicable. Only self-weight of concrete shall be considered for stabilizing download of structures against floatation.

(vi) walls shall be designed under operating conditions to resist earthquake forces from earth pressure mobilization and dynamic water loads(Hydrodynamic Impulsive Pressure);

(vii) For general retaining walls and large sized tanks where the walls are designed as retaining walls, sliding check shall also be performed along with over turning checks.

Overturning: The stability of a structure as a whole against overturning shall be ensured so that the restoring moment shall be not less than the sum of 1.2 times the maximum overturning moment due to the characteristic dead load and 1.4 times the maximum overturning moment due to the characteristic imposed loads. In cases where dead load provides the restoring moment, only 0.9 times the characteristic dead load shall be considered. Restoring moment due to imposed loads shall be ignored.

(viii) **Sliding:** The structure shall have a factor against sliding of not less than 1.4 under the most adverse combination of the applied characteristic forces. In this case only 0.9 times the characteristic dead load shall be taken into account.

(ix) Underground or partially underground structures shall also be checked against stresses developed due to any combination of full and empty compartments with appropriate ground/uplift pressures from below to base slab. A minimum factor of 1.2 shall be ensured against uplift or floatation.

(x) All the liquid retaining structures shall be design for maximum design crack widths of 0.1mm for direct tension and flexure.

(xi) In case of Large and Deep Underground Tanks, the analysis can be carried by Finite Element Method using STAAD. Pro or any other equivalent software predominantly used and accepted in the industry.

8.7 Foundations

(i) The minimum depth of foundations for all structures, equipment's, buildings and frame foundations and load bearing walls shall be as per IS 1904 but in any case, this shall not be less than 1.0 meter in the original soil.

(ii) Maximum safe bearing capacity of soil strata shall be taken as determined by the Bidder through his own independent investigations. Geotechnical

reports of proposed sites covered under the contract are provided with the Bid Documents. It may be used by Contractor as part of, in addition to, or in lieu of such investigations at his own risk.

The Bidder shall ensure the technical feasibility of the offer submitted after visiting the sites and conducting independent investigations. It must be clearly understood by the bidder that as the contract is Design , Build and Operate, the contractor shall be required to design and execute every such item(s) of work(s) which are considered required or necessary for the satisfactory completion and functioning of the entire work, commissioning of electro-mechanical equipment , Instrumentation, SCADA systems, trial run and operation and maintenance , and any other items required but not specified in the bid document, but are essential to complete the scheme. Nothing extra or additional shall be paid to the contactor on account of his failure of understanding.

(iii) Care shall be taken to avoid the foundations of adjacent buildings or structure foundations, either existing or not within the scope of this Contract. Suitable adjustments in depth, location and sizes may have to be made depending on site conditions. No extra claims for such adjustments shall be accepted by the Employer.

(iv) Special attention is drawn to danger of uplift being caused by the ground water table. All underground structural slabs shall be designed for uplift forces due to ground water pressure.

(v) EGL (Existing ground level) and FGL (Finished ground level) shall be marked on all drawings showing foundation/sub-structure details and related design documents.

(vi) Machine/static equipment foundations shall be separated from adjoining parts of buildings, other foundations and floor/pavement slabs. Joints at floor/pavement slabs shall be suitably sealed.

(vii) Foundations and structures for machines subject to vibrations shall be so proportioned that the amplitude and frequency of the foundation/structure are within the permissible limits as per relevant BIS codes (or as required by the machine vendor).

(viii) Machine foundations shall be designed and detailed as per IS: 2974. All appendages to such foundations shall be reinforced suitably to ensure integral action.

(ix) Pile Foundations - Design, Testing and Execution of piles shall be considered as per provision of relevant codes (conforming to latest version of IS: 2911), and in compliance with the Geotechnical report recommendations as applicable.

8.8 Design Requirements

The following are the design requirements for all reinforced or plain concrete structures:

a) All blinding and leveling concrete shall be a minimum 100 mm thick in concrete grade M10.

b) All Water retaining reinforced concrete structures, concrete shall be of a minimum M30 grade with a maximum 20 mm aggregate size for all - structural members and For Buildings, reinforced concrete shall be of a minimum M25 grade (Footings, Plinth Beams, Columns, Slab and beams, etc., i.e. which are other than liquid retaining structures) with a maximum 25 mm aggregate size for footings and base slabs and with a maximum 20 mm aggregate size for all other structural members. Further, if there are any liquid retaining RCC tanks coming up with in the buildings, concrete shall be of minimum M30 grade for such RCC tanks also.

c) The reinforced concrete for water retaining structures shall have a minimum cement content of 400 kg/m3 with a maximum 20 mm size aggregate and reinforced concrete for building structures shall have minimum cement content of 360 kg/m3 with a maximum 20 mm size aggregate. Reinforced concrete shall have minimum slump of 100mm with maximum water cement ratio of 0.48.

d) The minimum clear cover to all reinforcement including stirrups and links shall be 60 mm for all water retaining structures except for Launders/Gutter Slabs cover shall be 45mm. As design consideration to control crack, though general requirements of IS 3370 shall be followed, permissible crack width shall be limited to 0.1 mm for water retaining structures.

e) The minimum amount of reinforcement in each of the two directions at right angles within each surface zone should be provided as per clause 8.1 of IS 3370 (Part 2):2009. Definition of surface zones is clearly shown in Figure 1 and Figure 2 of IS 3370 (Part 2): 2009. For slabs, minimum of 10 mm dia bars shall be used to avoid any deformation of lesser diameter bars under loads prior to construction. Any water retaining structures which is more than 165mm thickness shall be with two layers of reinforcement.

f) The minimum cover to the main reinforcing bars for different members for non–water retaining structures shall be as follows unless stated otherwise:

Slab (Floor, Roof, Canopy, Staircase)	30 mm
Shell roof for Filter house/Clarifiers	25 mm
Beams (Sides, Bottom & Top)	40 mm
Lintels (all around)	30 mm
Columns	50 mm

Pedestals (in contact with earth)	50 mm
Basement wall, Retaining walls	
i) Face in contact with earth	50 mm
ii) Interior face	40 mm
Foundations	50 mm

g) For reinforced concrete structures, reinforcement shall be HYSD-CRS (Corrosion Resistant Steel) of Grade Fe 500. All physical and chemical properties of this Fe 500 grade steel shall conform to IS: 1786-2008. Welded wire fabric shall conform to IS: 1566 as shown or specified on the drawing. The CRS (corrosion resistant steel) index shall be at least 1.35 when tested for Salt Spray test as per "ASTM B 117 – 2009 test procedure for 120 hours when compared with the Fe 500 normal reinforcement bars and with same bar diameter. All test results (including physical and chemical properties and salt spray tests) have to be produced for the respective bar diameter for each consignment of steel delivered at site and at a frequency of every 20 Metric Tons.

h) All buildings shall have a minimum 1 meter wide, 100 mm thick plinth protection paving in M15 grade concrete or stone slabs/tiles. All plinth protection shall be supported on well compacted strata.

i) All pipes and ducts laid below the structural plinth and road works shall be surrounded with concrete of grade M15 having minimum 150 mm thick concrete or D/4 (D = outer dia. of pipe) thickness whichever is more.

j) Detailing of the reinforcement shall be considered as per latest Indian code of practices and special publications as applicable.

k) Any structure or pipeline crossing below roads shall be designed for Class A of IRC loading.

l) Sliding layer or slip layer shall be provided between sub base and structural slab (Raft). Polythene sheets of 500 microns shall be provided as sliding layer as per IS specification.

m) A layer of 230mm thick rubble packing with approved stone, set in regular lines, hand-packed, filling the interstices with approved small stone chips and sand, consolidating by ramming or compacting with heavy roller after watering including spreading of 12mm layer of stone grit on top shall be carried out for all building works below grade slabs/rafts/footings under water logged conditions/high water table conditions.

n) Water tightness testing of water retaining structures shall be done in accordance with IS: 3370, (Part I) - 2009. It is described in **Clause 5.34** of this document. The depth of water for testing shall be up to the soffit of the covering slab.

The following minimum thicknesses shall be used for different reinforced concrete members, irrespective of design thicknesses:

(i)	Walls for liquid retaining structures	:	250 mm
(ii)	Roof slabs for liquid retaining structures (Other than flat slabs)	:	200 mm
(iii)	Bottom slabs/Raft for liquid retaining structures	:	250 mm
(iv)	Floor slabs including roof slabs, walkways, canopy slabs	:	125 mm
(iii)	Walls of cables / pipe trenches, underground pits etc.	:	200 mm
(v)	Column footings	:	300 mm
(vi)	Parapets, chajja	:	100 mm
(vii)	Precast trench cover	:	75 mm
(viii)	Column Dimension	:	300 mm
(ix)	Launder Base Slab	:	200 mm
(x)	Launder Vertical Wall, Baffle Wall, Gutter Slab	:	175 mm
(xi)	Grade Slabs	:	150 mm

8.9 Materials in General

The term "materials" shall mean all materials, goods and articles of every kind whether raw, processed or manufactured and equipment and plant of every kind to be supplied by the Contractor for incorporation in the Works.

Except as may be otherwise specified for particular parts of the works the provision of clauses in "Materials and Workmanship" shall apply to materials and workmanship for any part of the works.

All materials shall be new and of the kinds and qualities described in the Contract and shall be at least equal to approved samples.

As soon as practicable after receiving the order to commence the Works, the Contractor shall inform to the Engineer of the names of the suppliers from whom he proposes to obtain any materials but he shall not place any order without the approval of the Engineer which may be withheld until samples have been submitted and satisfactorily tested. The Contractor shall thereafter keep the Engineer informed of orders for and delivery dates of all materials.

Materials shall be transported, handled and stored in such a manner as to prevent deterioration, damage or contamination failing which such damaged materials will be rejected and shall not be used on any part of the Works under this contract.

8.10 Samples and Tests of Materials

The Contractor shall submit samples of such materials as may be required by the Engineer and shall carry out the specified tests directed by the Engineer at the Site, at the supplier's premises or at a laboratory approved by the Engineer.

Samples shall be submitted and tests carried out sufficiently early to enable further samples to be submitted and tested if required by the Engineer.

The Contractor shall give the Engineer seven days' notice in writing of the date on which any of the materials will be ready for testing or inspection at the supplier's premises or at a laboratory approved by the Engineer. The Engineer shall attend the test at the appointed place within seven days of the said date on which the materials are expected to be ready for testing or inspection according to the Contractor, failing which the test may proceed in his absence unless instructed by the Engineer to carry out such a test on a mutually agreed date in his presence. The Contractor shall in any case submit to Engineer within seven days of every test such number of certified copies (not exceeding six) of the test results as the Engineer may require.

Approval by the Engineer as to the placing of orders for materials or as to samples or tests shall not prejudice any of the Engineer's powers under the Contract.

The provisions of this clause shall also apply to materials supplied under any nominated sub-contract.

8.11 Standards

Materials and workmanship shall comply with the relevant Indian Standards (with amendments) current on the date of submission of the tender.

Where the relevant standard provides for the furnishing of a certificate to the Engineer, at his request, stating that the materials supplied comply in all respects with the standard, the Contractor shall obtain the certificate and forward it to the Engineer.

The specifications, standards and codes listed below are considered to be part of this specification. All standards, specifications, codes of practices referred to herein shall be the latest editions including all applicable official amendments and revisions.

In case of discrepancy between the Specification and the Standards referred to herein, the Specification shall govern.

a) Materials

IS: 383 - Specification for coarse and fine aggregates from natural sources for concrete.

IS: 428 - Specification for washable distemper.

IS: 432 - Specification for mild steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement (Parts 1 & 2).

IS: 455 - Specification for Portland slag cement.

IS: 458 - Specification for precast concrete pipes (with and without reinforcement).

IS: 650 - Specification for standard sand for testing of cement.

IS: 651 - Specification for salt glazed stoneware pipes and fittings.

IS: 777 - Specification for glazed earthenware tiles.

IS: 808 - Specification for dimensions for hot rolled steel beam, column channel and angle sections.

IS: 814 - Specification for covered electrodes for manual metal arc welding of Carbon and Carbon Manganese steel.

IS: 1003 - Specification for timber paneled and glazed shutters (Parts 1 & 2).

IS: 1038 - Specification for steel doors, windows and ventilators.

IS: 1077 - Specification for common burnt clay building bricks.

IS: 1398 - Specification for packing paper, water proof, bitumen laminated.

IS: 1489 - Specification for Portland pozzolana cement (Parts 1 & 2).

IS: 1566 - Specification for hard drawn steel wire fabric for concrete reinforcement.

IS: 1580 - Specification for bituminous compounds for water proofing and caulking purposes.

IS: 1786 - Specification for high strength deformed steel bars and wires for concrete reinforcement.

IS: 1852 - Specification for rolling and cutting tolerances for hot rolled steel products.

IS: 1948 - Specification for aluminium doors, windows and ventilators.

IS: 1977 - Specification for low tensile structural steel.

IS: 2062 - Specification for hot rolled medium and high tensile structural steel.

IS: 2140 - Specification for Stranded Galvanized Steel Wire for Fencing.

IS: 2185 - Specification for concrete masonry units (Parts 1 & 2).

IS: 2202 - Specification for wooden flush door shutters (Parts 1 & 2).

IS: 2645 - Specification for integral water proofing compounds for cement mortar and concrete.

IS: 2750 - Specification for steel scaffoldings.

IS: 2835 - Specification for flat transparent sheet glass.

IS: 3384 - Specification for bitumen primer for use in waterproofing and damp proofing.

IS: 3502 - Specification for steel chequered plates.

IS: 4021 - Specification for timber door, window and ventilator frames.

IS: 4350 - Specification for concrete porous pipes for underdrainage.

IS: 4351 - Specification for steel door frames.

IS: 4990 - Specification for plywood for concrete shuttering work.

IS: 8112 - Specification for 43 grade ordinary Portland cement.

IS: 9862 - Specification for ready mixed paint, brushing, bituminous, black, lead free, acid, alkali, water and chlorine resisting.

IS: 10262 - Specification for concrete mix proportioning guidelines.

IS: 12330 - Specification for sulphate resisting Portland cement.

IS: 12709 - Glass fiber reinforced plastics (GRP) pipes, joints and fittings for use for potable water supply.

b) Tests

IS: 516 - Method of test for strength of concrete.

IS: 1182 - Recommended practice for radiographic examination of fusion - welded butt joints in steel plates.

IS: 1199 - Methods of sampling and analysis of concrete.

IS: 2386 - Methods of test for aggregates for concrete (Parts 1 to 8).

IS: 2720 - Methods of test for soils (Parts 1 to 39).

IS: 2911 - Code of Practice for design and construction of Pile foundations (Part 4).

IS: 3025 - Methods for sampling and test (physical and chemical) for water and wastewater (Parts 1 to 59).

IS: 3495 - Method of test for burnt clay building bricks (Parts 1 to 4).

IS: 3613 - Acceptance tests for wire flux combination for submerged arc welding.

IS: 4020 - Methods of tests for doors shutters.

IS: 4031 - Methods of physical tests for hydraulic cement (Parts 1 to 15).

IS: 5807 - Method of test for clear finishes for wooden furniture (Parts 1 to 6).

IS: 7318 - Approval tests for welders when welding procedure approval is not required (Parts 1 and 2).

IS: 13311 - Methods of Non-destructive testing of Concrete: Part 1 & Part 2.

c) Codes of Practice

IS: 456 - Code of practice for plain and reinforced concrete.

IS: 783 - Code of practice for laying of concrete pipes.

IS: 800 - Code of practice for general construction in steel.

IS: 806 - Code of practice for use of steel tubes in general building construction.

IS: 816 - Code of practice for use of metal arc welding for general construction in mild steel.

IS: 817 - Code of practice for training and testing of metal arc welders.

IS: 875 - Code of practice for design loads (other than earthquake) for building structures (Parts 1 to 5).

IS: 1081 - Code of practice for fixing and glazing of metal (steel and aluminium) doors, windows and ventilators.

IS: 1172 - Code of practice for basic requirements for water supply, drainage and sanitation.

IS: 1477 - Code of practice for painting of ferrous metals in buildings (Parts 1 & 2).

IS: 1597 - Code of practice for construction of stone masonry (Parts 1 & 2).

IS: 1742 - Code of practice for building drainage.

IS: 1893 - Criteria for earthquake resistant design of structures (Part 1).

IS: 1904 - Code of Practice for Design and Construction of Foundation in Soils: General Requirements.

IS: 1948 - Specification of aluminum doors, windows and ventilators.

IS: 2065 - Code of practice for water supply in buildings.

IS: 2204 - Code of practice for construction of reinforced concrete shell roof.

IS: 2210 - Code for design of reinforced concrete shell structures and folded plates.

IS: 2212 - Code of practice for brickwork.

IS: 2338 - Code of practice for finishing of wood and wood-based materials (Parts 1 & 2).

IS: 2394 - Code of practice for application of lime plaster finish.

IS: 2395 - Code of practice for painting, concrete, masonry and plaster surfaces
(Parts 1 & 2).

IS: 2470 - Code of practice for installation of septic tanks (Parts 1 & 2).

IS: 2502 - Code of practice for bending and fixing of bars for concrete reinforcement.

IS: 2571 - Code of practice for laying in-situ cement concrete flooring.

IS: 2595 - Code of practice for radiographic testing.

IS: 2751 - Recommended practice for welding of mild steel plain and deformed bars for reinforced construction.

IS: 2911 - Code of Practice for design and construction of Pile foundations.

IS: 2974 - Code of practice for design and construction of machine foundations (Parts 1 to 4).

IS: 3114 - Code of practice for laying of Cast Iron pipes.

IS: 3370 - Code of practice for concrete structures for the storage of liquids (Parts 1 to 4).

IS: 3414 - Code of practice for design and installation of joints in buildings.

IS: 3558 - Code of practice for use of immersion vibrators for consolidating concrete.

IS: 3658 - Code of practice for liquid penetrant flaw detection.

IS: 3935 - Code of practice for composite construction.

IS: 4000 - Code of practice for High strength bolts in steel structures.

IS: 4014 - Code of practice for steel tubular scaffolding (Parts 1 & 2).

IS: 4111 - Code of practice for ancillary structures in sewerage system (Parts 1 to 4).

IS: 4127 - Code of practice for laying of glazed stoneware pipes.

IS: 4326 - Code of practice for Earthquake Resistant Design and Construction of Buildings.

IS: 4353 - Recommendations for submerged arc welding of mild steel and low alloy steels.

IS: 5329 - Code of practice for sanitary pipe work above ground for buildings.

IS: 5334 - Code of practice for magnetic particle flaw detection of welds.

IS: 5822 - Code of practice for laying of electrically welded steel pipes for water supply.

IS: 7215 - Tolerances for fabrication of steel structures.

IS: 9595 - Recommendations for metal arc welding of carbon and carbon manganese steels.

IS:10005 - SI units and recommendations for the use of their multiples and of certain other units.

SP: 16 - Design Aids for Reinforced Concrete to IS 456.

SP: 34 - Handbook on Concrete Reinforcement and Detailing.

SP: 38 - Handbook of Typified Design of Structures with Steel Roof Trusses.

d) Construction Safety

IS: 3696 - Safety code for scaffolds and ladder (Parts 1 & 2).
IS: 3764 - Safety code for Excavation work.
IS: 7205 - Safety code for erection of structural steel work.

8.12 General Arrangement of Plant

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8.13 Orientation

The works shall be laid out within the confines of the Site in order to interface to the existing infrastructure of roadways and inlet and outlet pipe work. Underground services requiring to be relocated in order to accommodate the proposed site layout shall, with the approval of the Engineer, be relocated by the Contractor.

8.14 Buildings and Structures

All the building and structure works shall generally comply with the following Employer's Requirements unless otherwise specified elsewhere.

1. All building works shall be of reinforced concrete framework (Concrete Grade of M25 as a minimum).

2. All external walls shall be in solid cement concrete blocks of concrete grade M15 and shall be provided as per IS: 2185 (Latest Revision) and shall be 200 mm thick.

3. All internal partition walls shall be in solid concrete blocks of concrete grade M15 and shall be provided as per IS: 2185 (Latest Revision). All internal walls shall be 200mm thick except for toilets. Toilet partition walls shall be in 100 mm thick solid concrete block.

4. (a) Finishes to concrete liquid retaining structures shall be:

F1 - External surfaces, only for Raft.
F2 - External surfaces.
F2 - Internal surfaces

(b) Finishes to other concrete structures shall be:
F1 - Buried

F1 - Exposed, where plastering is specified

F2 - Exposed

The type of finishes is explained in “Standard Basic Specifications for Civil and Structural Works” in Chapter 4.

5. All internal masonry surfaces finish shall have 12 mm thick plain faced cement plaster in cement mortar (1:4) with neat cement finish on top. Over this, one coat of primer and two coats of plastic emulsion paint of approved quality and shade shall be provided.

6. All external masonry surfaces and concrete surfaces with rough board finish shall have 20 mm thick sand faced cement plaster in two coats, base coat 12 mm thick in cement mortar 1:4 and finishing coat 8 mm thick in cement mortar 1:4. Waterproofing compound of approved make and quality shall be added to the cement mortar in proportions as specified by the manufacturer.

7. All external surfaces above ground level shall have one coat of primer and two coats of waterproof cement-based paint of approved quality and shade. A coat of silicone water repellent paint shall also be applied thereon.

8. Building plinth shall be minimum 450 mm above average finished ground level around building.
9. All structural steel members shall be painted with two coats of enamel paint over one shop and one field coat of red oxide zinc chrome primer.

8.15 Roadways, Pathways & Hard Standings

-Deleted-

8.16 Site Drainage

-Deleted-

8.17 Cable and Pipe work Trenches

Cable and pipe work trenches shall generally be constructed in reinforced concrete.

Trenches within the buildings or Plant areas shall be covered with M.S chequered plates, suitably painted and those outside the buildings shall be covered with M20 precast R.C.C covers. The trenches shall be suitably sloped to drain rain water. All uncovered openings shall be protected with hand railing

Layout of trenches outside the buildings shall allow space for construction of future trenches where necessary with due consideration for planning for future developments. This aspect shall be brought to the notice of the Engineer while planning the works.

8.18 Pipes and Ducts

R.C.C ducts for drainage shall have minimum 1meter cover while laid under roads. Access shafts of size not less than 600 mm x 1000 mm shall be provided.

All drains (except storm water drains adjacent to roads) shall be covered with precast RCC slab and designed structurally for appropriate loads. All interconnecting piping and channels in the pumping station as per requirement and as per specifications.

8.19 Compound Wall and Gate

-Deleted-

8.20 Valve Chambers

All valve chambers are to be of an adequate size to facilitate maintenance and operation. The base slab of valve chambers shall slope towards a sump pit from which water can be pumped to keep the chamber dry. All valve chambers shall be constructed in reinforced concrete. Chambers shall have removable cast iron / reinforced concrete covers, as appropriate, approach ladders and valve support.

The site shall be landscaped once the Works are substantially complete. Landscaping area shall be marked in layout plan.

Landscaping shall include planting of suitable trees and development of grassed areas. Landscaping in general shall meet ecological and environmental conditions of the site. Road widths shall determine the size of the tree height and spread to be selected for planting. Trees suitable for local conditions shall be selected. Medicinal and fruit trees shall be avoided. Landscaping shall be maintained in good condition till the completion of contract.

8.21 Tree Planting

Pits dug a few days in advance of actual planting shall be allowed to weather and be filled with top soil mixed with manure. Size of the pit shall be as per standard requirement. Only one tree shall be planted in each pit. A guard made of bamboo with wire mesh or bricks or M.S. rings as approved by Engineer shall be provided.

8.22 Hydraulic Testing of Liquid Retaining Structures

In addition to the structural test of structures as applicable, the liquid retaining structures shall also be tested for water tightness test at full supply level as described in clauses 12.1,12.1.1, 12.1.2 and 12.1.3 of latest version of IS 3370 (Part I).

On completion of the structure and before its commissioning, the contractor shall carry out a water tightness test for the maximum water head condition i.e. with the water standing at Full Supply Level (FSL). This test shall be carried out preferably in dry season in accordance with the procedure given below:

The water tightness test shall be carried out when the construction of liquid retaining structure is completed and when it is possible to fill the structure and ensure that uniform settlement of the structure as a whole or as directed by the Engineer. Before the filling operations are started the structure shall be inspected by the Engineer and the Contractor's Representative and the condition of surfaces of walls, contraction joints shall be noted and it shall be ensured that the jointing material filled in the joint is in position and all openings are closed. The Contractor shall make necessary arrangement for ventilation and lighting of the structure by way of floodlights, circulators etc. for carrying out proper inspection of the surfaces and inner conditions if so desired by the Employer. Records of leakages starting at different levels of water in the reservoir, if any, shall be kept.

The liquid retaining structure once filled shall be allowed to remain so for a period of seven days before any readings of drop in water level are recorded. The level of the water shall be recorded against the subsequent intervals of 24 hours over a period of seven days. The total drop in surface level over a period of seven days shall be taken as an indication of the water tightness of the structure, which for all practical purposes shall not exceed 40 mm. Also, there shall be no indications of the leakages around the opening or on the walls.

If the structure does not satisfy the condition of test and the daily drop in water level is decreasing, the period of test may be extended for a further period of seven days and it the specified limit is then reached the structure may be considered as satisfactory.

The external faces of structure shall not show any signs of leakage and shall remain apparently dry over the period of observation of seven days after allowing a seven-day period for absorption after filling.

In case the drop-in level exceeds the permissible level limit and signs of leakage with the stipulated period of test, the Contractor shall carry out such additional works and adopt such measures as may be directed by the Engineer to reduce the leakage within the permissible limits. The entire rectification work that shall be carried out in this connection shall be at the Contractor's cost. The water required for subsequent testing shall be supplied to the Contractor free of cost, if the same is available near the site. Contractor shall have to make arrangement for filling emptying the structure at his own cost.

If the test results are unsatisfactory, the Contractor shall ascertain the cause and make all necessary repairs and repeat the water retaining structures test procedures, at his own cost. Should the re-test results still be unsatisfactory after the repairs, the structure will be condemned and the Contractor will dismantle and reconstruct the structure, to the original specification, at his own cost.

During testing and during defect liability period the impression marks created due to seepage shall be rectified and made good.
No separate payment shall be made for water tightness test and the cost thereof shall deem to be covered in the rates quoted for the works.

8.23 Non-Destructive Testing of RCC Structures

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SECTION 9:

BILL OF QUANTITIES

Rate (Rs)						
Sl. No.	Description of item (with brief specification and reference to Book of specification)	Quantity	Unit	In figures	In words	Amount (Rs)
Total Tender Price (in figures)						
(in words)						

Note:

(1) Item for which no rate or price has been entered in will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities [*refer: ITB Clause 11.2 and CC Clause 37.2*].

(2) Unit rates and prices shall be quoted by the Tenderer in Indian Rupees.

(3) Where there is a discrepancy between the rate in figures and words, the lower of the two will govern. [*ITT Clause 24.1(a)]*

(4) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by quantity, the unit rate quoted shall govern [*ITT Clause 24.1 (b*)]

SECTION 10:

FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT

To:.
The Executive Engineer
(WWM-Project)-K&T Valley Division,
Kapila Bhavan, 2nd Floor, 35th Cross,
Jayanagar 4th T Block, Bangalore-560041.

WHEREAS ---------- [name and address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. dated to execute the work of ----------
---------- [name of Contract and brief description of Works] (hereinafter called "the Contract");
AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;
AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;
NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Rs……./- [amount of guarantee] Rupees ____ only [in words], and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.
We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.
We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.
This guarantee shall be valid until 30 days from the date of expiry of the Defects Liability Period.
Signature and seal of the guarantor _____

Name of Bank _____
Address _____
Date _____

SECTION 11:

DRAWING